REMARKS

The Applicants respectfully request further examination and consideration in view of the amendments above and the arguments set forth fully below. Claims 1-12 were previously pending in this application. Within the Office Action, Claims 1-12 were rejected. Accordingly, Claims 1-12 are currently pending.

Rejections Under 35 U.S.C. § 103

Within the Office Action, Claims 1, 3-6, 11 and 12 have been rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent No. 6,049,148 to Nichols et al. ("Nichols") in view of U.S. Patent Publication No. 2003/0080638 to Shinozaki ("Shinozaki"). The Applicants respectfully disagree.

Nichols teaches a rotary motor and a rotary magnetic bearing integrated in a compact assembly that is contactless. A stator assembly surrounds a ferromagnetic rotor with an annular air gap which can accommodate a cylindrical wall. The stator assembly has a permanent magnet or magnets sandwiched between vertically spaced magnetic stator plates with plural pole segments. The stator assembly levitates and passively centers the rotor along a vertical axis and against tilt about either horizontal axis. A controller energizes control coils wound on each stator pole segment in response to a sensed physical position of the rotor. The control coils provide active radial position control and can actively damp tip and tilt oscillations that may overcome the passive centering. [Nichols, Abstract] However, as is recognized in the Office Action, Nichols does not teach a feedback control system used in conjunction with a proportional-integral-derivative (PID) controller configured to detect displacement of said metallic device in at least the first and second directions and to cause the magnetic force being generated by the electromagnetic coil assembly to be varied to correct displacement of said metallic device.

Shinozaki teaches a controlled magnetic bearing apparatus which generates a control signal based on a sensor signal from a displacement sensor for detecting a radial displacement of a rotor to suppress whirling of the rotor due to an external force synchronized with a rotational movement. [Shinozaki, Abstract] Shinozaki also teaches a "circuit configuration [that] is generally used as a derivative element for an ordinary PID control." [Shinozaki, Paragraph 79 and Figs. 15A-C] Although PID is mentioned by Shinozaki, there is no teaching directed towards using a PID controller in conjunction with a feedback control system configured to detect displacement of said metallic device in at least the first and second directions and to cause the

magnetic force being generated by the electromagnetic coil assembly to be varied to correct displacement of said metallic device. In contrast, Shinozaki only states that the circuit configuration is generally used as the derivative element for an ordinary PID control. The derivative element is only one third of PID, specifically the "D" of PID. Shinozaki teaches nothing about the Proportional or Integral aspects of PID. Therefore, Shinozaki does not teach a feedback control system used in conjunction with a proportional-integral-derivative (PID) controller configured to detect displacement of said metallic device in at least the first and second directions and to cause the magnetic force being generated by the electromagnetic coil assembly to be varied to correct displacement of said metallic device.

In contrast to Nichols and Shinozaki, the present invention is directed to a ring-spinning system for making yarn. The ring-spinning device supports a rotating ring in a stable manner around its center without touching the stator component. A rotating spinning ring has an eye that performs functions equivalent to a traveler in a conventional ring-spinning system. [Present Specification, Paragraph 23] The ring-spinning system also utilizes a proportional-integral-derivative (PID) controller as a core of the control system. [Present Specification, Paragraph 36] As described above, neither Nichols, Shinozaki nor their combination teach a feedback control system used in conjunction with a proportional-integral-derivative (PID) controller configured to detect displacement of said metallic device in at least the first and second directions and to cause the magnetic force being generated by the electromagnetic coil assembly to be varied to correct displacement of said metallic device.

The independent Claim 1 is directed to a magnetic elevation system. The magnetic elevation system of Claim 1 comprises a stator assembly having a permanent magnet assembly secured thereto, the stator assembly being substantially cylindrical in shape, a support assembly configured to support a metallic device that is to be magnetically elevated, the permanent magnet assembly providing a magnetic force that is exerted on said metallic device in at least a first direction, an electromagnetic coil assembly capable of generating a magnetic force that is exerted on said metallic device in at least a second direction and a feedback control system used in conjunction with a proportional-integral-derivative (PID) controller configured to detect displacement of said metallic device in at least the first and second directions and to cause the magnetic force being generated by the electromagnetic coil assembly to be varied to correct displacement of said metallic device. As discussed above, neither Nichols, Shinozaki nor their combination teach a feedback control system used in conjunction with a proportional-integral-derivative (PID) controller configured to detect displacement of said metallic device in at least

the first and second directions and to cause the magnetic force being generated by the electromagnetic coil assembly to be varied to correct displacement of said metallic device. For at least these reasons, the independent Claim 1 is allowable over the teachings of Nichols, Shinozaki and their combination.

Claims 3-6, 11 and 12 are dependent upon the independent Claim 1. As discussed above, the independent Claim 1 is allowable over the teachings of Nichols, Shinozaki and their combination. Accordingly, Claims 3-6, 11 and 12 are all also allowable as being dependent upon an allowable base claim.

Within the Office Action, Claims 2 and 7-10 have been rejected under 35 U.S.C. 103(a) as being unpatentable over Nichols and Shinozaki and further in view of U.S. Patent No. 6,223,512 to Koltze et al. ("Koltze"). The Applicants respectfully disagree.

Claims 2 and 7-10 are dependent upon the independent Claim 1. As discussed above, the independent Claim 1 is allowable over the teachings of Nichols, Shinozaki and their combination. Accordingly, Claims 2 and 7-10 are all also allowable as being dependent upon an allowable base claim.

For the reasons given above, Applicants respectfully submit that the Claims 1-12 are in a condition for allowance, and allowance at an early date would be appreciated. Should the Examiner have any questions or comments, the Examiner is encouraged to call the undersigned at (408) 530-9700 to discuss the same so that any outstanding issues can be expeditiously resolved.

Respectfully submitted,
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